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COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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BEGINNING - OUR SIXTH YEAR OF SERVICE

COOP'S TECHNOLOGY DIGEST

July 29, 1998 ◆ VOLUME 98-07-50

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Setting The Standard

Something quite unsettling is happening in New Zealand, Australia and world-wide with the transition to digital telecasting techniques. And that is the trend for television transmission and reception standards to be set independent of industry or government oversight and participation.

Here is the reality. When Australis selected the Irdeto conditional access system and the NTL uplink package of electronics for their Galaxy satellite pay-TV service, this was a single business making a decision about what technology they would employ to deliver their product to customers. Between Galaxy and affiliated firm Austar, more than 300,000 Irdeto conditional access format IRDs would go into use in more than 5% of all Australian homes and with the anticipation this percentage of home penetrations would grow to at least 10% by year 2000.

When Optus Communications set out to establish its own direct to home service for rural areas (called RABS for Remote Area Broadcasting Service), one of the first executive-engineering level decisions made was to adopt the same Irdeto conditional access transmission format. Optus explained, one year ago, "*We do not intend to introduce a non-compatible digital transmission or conditional access format to Australia.*" Optus was under public pressure from Government to adopt a transmission system that would allow consumers to access all of their TV services through a single set-top box. ACCC Chairman Alan Fels, Minister of Communications Senator Richard Alston frequently reminded Optus and the industry at large of their perceived need to adopt one and only one transmission technology. Fels in particular used every opportunity to speak out against two or more "set top boxes in a home." He sees this as an evil intrusion on the public welfare and an unfriendly barrier to quick adoption of digital technology.

Australis - the corporation - very possibly never considered their selection of a particular brand and format of encryption and conditional access to be a trail blazing decision. Doubtless, they made their decision (in mid 1995) based upon normal commercial considerations; price, performance, service backup. In fact, although Australis has not survived as a commercial entity, their decision to favour NTL transmission protocol and Irdeto conditional access remains as a legacy.

Television New Zealand's View: He who controls the set-top-box controls television

"The set-top-box is effectively the control centre for a raft of services to the home, including the traditional Free-to-Air use of television plus home shopping, banking and video telephony. *Those operators who are in a position to influence the standards and access conditions of the set-top-box will have a competitive advantage in the digital environment.* With the set-top-box comes a wider range of choices for viewers, choice no longer determined by geographic boundaries."

Source: TVNZ 1997 Annual Report to Shareholders, page 9

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Standards - As a tool to service development

Broadcasting - the transmission of information to the public at large - has matured over the more than 70 year history because at critical points in its development standards were established to make transmitters and receivers compatible. Industry organisations (IEE/IEEE, EIA et al) have over the decades created forums where suitable technical standards could be debated, tested, and compromised to suit both commercial and public interests. Within each country, government agencies have in turn taken the recommendations and input from the industry technical groups to create legislated standards of transmission. If transmission is standardised, compatible receivers will follow.

Although the world's engineering societies (made up of broadcasters, satellite operators, production firms and others) did spend several years debating and settling on the MPEG (2) "standard" for digital transmission, there was less than complete consensus on each aspect of the new "world standard." Their objective was to come to an agreement on how a digital service constructed to be universally available with a "standard format receiver" would in fact be "DVB Compliant." As a consequence, individual users of MPEG (2) have a considerable amount of freedom to vary their interpretation of "the standard." This has led to the claim by Scientific Atlanta that their customised "PowerVu" system is "DVB Compliant" with similar claims from the Rupert Murdoch empire's NDS MPEG-2 system. Technically, both appear to conform to the technical rules for "MPEG-2" and DVB compliant IRDs will in fact access free to air PowerVu and Murdoch NDS design free to air transmissions. However, in reverse, a PowerVu receiver or a Murdoch NDS receiver will not access a true DVB compliant free to air service.

What this tells us is that a programmer can make decisions which:

1) Force his viewing customers to purchase a receiver that is compatible with his data stream,

2) Design the data stream to prevent that receiver from being used to view any other (as in possibly competitive) services.

Some believe this makes a mockery of the entire concept of "DVB Compliant" integrated receiver decoders. Others suggest that when such receivers are sold to the consumer, nothing less than a full disclosure as to the limitations of that receiver should be required in response to consumer protection and fair trading acts as they apply in various countries. To date, no programmer utilising such a limited-use receiver has notified their customers of the receiver's limitations.

"First in" is the standard

Selection of an IRD is therefore much more than an engineering decision. By electing to use a receiver with a built-in inability to function for any data streams other than those of the programmer, the programmer is exercising marketing exclusivity on his pay customer base. He is saying, in effect, "*For any competitive (pay-TV) programmers who come into our market after us, they will not be able to ride on our investment in receivers.*" When a pay-TV programmer gets a significant customer base, and has created a receiver distribution programme which involves a sizeable investment by the consumer in the receiving system, it becomes increasingly unlikely that a future competitor will be able to enter the market.

The IRD selection, the way the IRD is marketed to consumers, becomes a defence mechanism which effectively shuts others out of the market at a future date. And in this process, the selection of the IRD establishes for that geographic region a de facto "standard" for digital reception processing equipment (receivers) which could well last for decades or longer.

All of this happens outside of the purview of the normal standard setting groups, and in most countries to date, outside of the regulatory overview of government agencies such as the Ministry of Commerce. Where previously standards for transmission and the compatible receiving equipment have been established by industry and government consensus, in today's deregulated pay-TV environment that decision process has become the private domain of a single company. The effects of this are likely to be very long lasting, especially as the conversion from analogue terrestrial broadcast becomes a part of the overall conversion to digital that is being led by today's satellite delivered pay-TV providers.

A brief reflection on how this process used to happen. In 1934, British firm EMI created the first working high definition, VHF television transmission system. EMI was anxious to have their patented system adopted by the BBC as the "standard" for public television in Great Britain. EMI wanted no part of programming; they only wanted to see television established as a service. EMI planned to make back their not inconsiderable initial investment in developing television broadcasting through the sale of television transmission equipment and television receivers. A study committee appointed by Government decided after 18 months of review that the EMI system was acceptable but recommended that the BBC begin televising using the EMI system only under the condition that EMI agree to make its many patents in the field available to other potential receiver and transmitter manufacturers through a patent pool. EMI reluctantly agreed to this. Government in effect "negotiated" an agreement that brokered the promise of a government operated television programming service (from the BBC) in exchange for the system's developer making their patent control over the process available on a pooled open market basis. As we all know, the process worked out very nicely.

Government participation in modern day television "standards" is conspicuous by its absence. Ministry of Commerce (New Zealand) officials deny any responsibility for participating in the creation of "standards" for transmission. And this leaves the way open for programmers such as Sky to turn transmission standards into a new form of "exclusivity" which denies anything approaching an open playing field for later entrants into the digital television business in New Zealand.

None of this has gone unnoticed at the level of equipment suppliers. Pace Micro Technology, the primary supplier of digital receivers for the Sky NZ programming bouquet, quite openly preaches the importance of selecting their system because it is capable of being "software and hardware configured to prevent use by competitors." Translation? If a programmer selects a Pace system, they have the added assurance that a future competitor to Sky will not be able to take commercial advantage of the existing universe of Sky supplied decoders. If Pace IRDs work only with the Sky service, a later competitor will be forced to select their own separate-from-Pace IRD supplier utilising a second probably also not compatible digital transmission format.

Sky, like the original Australis / Galaxy service in Australia, has three tools to insure the "loyalty" of their customers by excluding future competitors from the marketplace. They are:

1) Australis/Galaxy negotiated an agreement with its original IRD supplier, coincidentally Pace, that the PACE IRDs would only be sold in Australia by and through Australis/Galaxy. In effect, Pace granted an "exclusive" distribution agreement for their customised IRD for Australia to Australis.

2) The IRD is only valuable as a pay-TV system if it is married to a conditional access system. The CA technology allows the programmer to direct specific channels or groups of channels to each subscriber.

Conditional access (CA) technology involves implanting individual IRD electronic addresses inside of the digital data stream transmitted by the programmer. The data stream in addressing a single IRD tells the IRD which channel or channels that IRD can process.

Unlike the MPEG-2 DVB Compliant "world standard" agreement, there is no similar agreement relating to the conditional access portion of the digital data stream. Virtually any data stream technology that can be married to the transmission system is "legal" under the MPEG-2 standard. This allows a programmer such as Sky to claim "DVB compliance" for their digital data stream, when in fact because of the lack of standards for the CA portion of the stream the total package consisting of DVB video + CA can be virtually anything the programmer wishes.

In the case of Australis/Galaxy, the conditional access system was supplied by industry pioneer Irdeto; a Dutch based firm. Irdeto and Australis executed an agreement which handed to Australis the *exclusive* right in Australia to utilise the Irdeto CA system. The effect of this was that Australis had yet a second way to ensure there would never be a pay-TV competitor who could take advantage of the already installed IRD/decoder base put in place for Australis/Galaxy. If Australis was the sole licensee of Irdeto in Australia, no competitor could start-up a pay-TV system that would or could access the Australis receivers simply because lacking Irdeto CA technology the receivers could not function on a competitive service. **(1)**

3) The pay-TV programmer is under no obligation to "transfer title" of the IRD/decoder to the consumer. The temptation to do so may be considerable, given the sizeable investment per IRD involved (see CTD#98-04-47, p. 2) but if the programmer can collect the equivalent of the IRD delivered cost from the consumer and *still retain ownership* of the IRD, this removes the consumer

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option to do with the IRD as he may wish (such as trading it for a competitive service IRD at a future date).

Sky NZ's marketing plans for the digital IRDs has not been announced but it is reasonable to assume the cornerstone of their plan will not include the consumer purchasing (and taking title to) the IRD/decoder. Sky would argue that they are actually protecting the consumer from product obsolescence by retaining ownership of the "box." That is, as new technology arrives and the decoder requires replacement, Sky will suggest they will bear the expense of the upgraded replacement. That this will actually happen five or more years down the road will of course only be seen when it happens.

To summarise. The IRD is a custom-to-the-pay-service decoder, purposefully designed with hardware and software "blocks" to make it useless for applications other than those created by the programmer. Even free to air services (i.e., those not controlled by a conditional access regime) can be blocked from view as Scientific Atlanta PowerVu, Murdoch created Pace IRDs routinely do. If a programmer such as Sky allows what they claim is "free to air" reception" with their IRD (such a group of channels is possible from TV1, TV2, TV3, TV4 and Prime), the IRD will only receive those services that have been data stream configured to be free to air. What that means is that while some programme channels within the Sky bouquet may well end up being available without subscription, they are not going to be viewable unless the consumer has purchased the Sky designated IRD/decoder. Moreover, only those designated channels data stream processed by Sky will be free to air viewable through the IRD/decoder. Other DVB compliant free to air services from programmers other than Sky will simply not play through the decoder; even if they are otherwise available without a subscription.

Murdoch's Star TV in Asia and the new BSkyB service in the UK have pioneered this quasi-free to air approach. Yes, some of their transmission channels can be viewed without payment of a monthly fee. But only if the consumer purchases a designated (Murdoch approved) IRD/decoder and only if the consumer has agreed to also subscribe for some "basic" package of pay-TV channels through that decoder. In other words, the free to air services are only free to air if the authorised decoder is subscribing to some level of pay-TV programming. In effect, *the free to air are not free to air* - because they can only be received if the consumer agrees to pay for others - and are in reality a "free bonus" to the purchase of some other designated channel group. Whether this Murdoch Asia and UK approach to free to air services will be followed by Sky NZ has yet to be announced.

At the very least, the consumer is required to acquire the pay-TV programmer's designated IRD/decoder to gain access to the non-subscription (free to air) channels. One of the marketing tricks employed by Star TV Asia is to make the IRD available for free to air use at one price and to offer the same IRD for pay programme subscription at a price significantly lower than the free to air user price. For example, $1,300 for an IRD that the user elects to use only for free to air reception, or $650 for the same IRD if the user agrees to a minimum contract period (one or two years) of pay TV service. The IRD does not change - only the entry level cost to the consumer.

The effect of this is a marketing tool.

"*You can pay us $1,300 for your IRD (system) and watch free to air channels. Or you can pay us $650 for the same package of equipment, and agree by contract to subscribe to our basic ($40 per month) programming package for a period of two years.*"

With half the entry cost, and the benefits of the pay-TV basic package as a "bonus" Star TV is finding in Asia that more than 95% of the consumers are electing to take the IRD plus basic programming package. At $1,300 per system package, the programmer earns a few hundred dollars

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1/ Who owns Irdeto in Australia? That question, legal and technical, has allowed the Austar 18 programme channel in Australia to remain free-to-air from May 20 to the end of July. Australis receivers announced in late May the "rights to Irdeto" had been purchased by a 50-50 partnership made up of Optus Communications and Austar. Apparently Irdeto did not totally agree, and for nearly eight weeks legal and technical tussles have followed. As CTD goes to press, there are the first signs that Irdeto - the customer controlling conditional access system - is coming back on line (see report under Satellite - Bits and Bytes - here.

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"profit" on the transaction, and has an additional IRD in place which the consumer can at any time convert (through a toll free telephone call) to a subscription to the pay-TV programming package. At the $650 level, the programmer subsidises the cost of the system package by a few hundred dollars, but gains a paying monthly subscriber. Out of the monthly subscription revenue, over time, the programmer plans to get back the subsidy (CTD#98-03-46, p. 4).

The difficult choice for later entrants

Irdeto is represented in Australia by a firm (Irdeto Associates, 61-2-9957-3388) headed by Peter Iles. This office services the original Irdeto licensee (Australis) as well as other potential clients in the Pacific and Asia. Irdeto was not chosen as the conditional access system by Sky NZ.

Iles. "*Once the dominant player in pay-TV in an area is firmly established, it becomes financially prohibitive to change the technology. There are two critical points - the first year when the service is initially launched, and then four years down the road where by natural progression the original technology - whatever it may have been - will be faced with significant challenges from the later generation technology. If the pay-TV provider can get through year four unscathed, the technology it has chosen is likely to become the 'standard' for that region for the indefinite future.*"

Iles believes, "*Irdeto is firmly entrenched in Australia and any pay-TV firm coming into the business after Australis has to deal with that reality.*" Because the Irdeto license to Australis was "exclusive," when Optus Communications made the corporate decision to not bring a second, non-compatible CA system into Australia late in 1997, they were left with working out a sub-license arrangement with Australis. Optus initially professed an interest in using Irdeto solely for their outback (rural) TV and data distribution services (Remote Area Broadcast Service or RABS). Subsequently, when Australis went into receivership and corporate dismemberment, Optus expanded their interest to include use of Irdeto for a direct to home pay-TV platform. (**2**)

Iles believes there are two hurdles for any later entrant to pay-TV in a market where one service provider is already operating. "*The answer next year - not today - will be something called simulcrypt. The concept of simulcrypt allows two totally incompatible conditional access systems to share the same data stream. For example, Irdeto and Viaccess. In this way, it will be possible for two programmers, in partnership or even competition with one another, to offer essentially the same or parts of the same programme stream to their respective customers.*"

An example of how this *might* work. Austar and Foxtel in Australia, sharing a bouquet of programming; a total of 30 programme services. Of these, 18 are offered to Austar customers using Irdeto CA, while the entire package of 30 are offered to Foxtel customers using an NDS/NDC conditional access system.

"*Neither programmer gives up anything with this: both are free to continue using their respective IRDs, and each IRD only functions with the designed-for CA system. Simulcrypt allows a sharing of transponder space (satellite spectrum), a reduction in operating costs for the operators involved, but without changing the integrity of each system's own CA system.*" (**3**)

Iles sees simulcrypt as a major technical building block for the certain world-wide rationalisation of pay-TV ventures. He agrees that costs for stand alone pay-TV services, especially where there is duplication of programme service offerings, must be cut dramatically for many presently marginal services to survive. Simulcrypt will, for example, allow both Austar and Foxtel to jointly offer services such as TNT/Cartoons, each to their own subscribers with each using their own CA system, without having to actually send two separate spectrum consuming sets of TNT/Cartoons.

2/ If, in fact, Optus Communications is a participant in the Irdeto "rights" in Australia, this becomes a bargaining chip in their negotiations with Foxtel heading towards the final rationalisation of pay-TV in Australia. Optus would utilise Irdeto for a pay-TV platform under the Optus Cable (Satellite) banner if such a platform actually does become a reality.

3/ Simulcrypt, if it functions as now described, would allow each programmer to cherry pick channels out of a multi channel bouquet on a subscriber by subscriber basis. This would not prevent some programme channels from being exclusive to a single programmer which would leave subscribers still with decisions as to which overall service to subscribe to. If the IRD remained the same and subscribers could change programme packages, a form of industry rationalisation must follow. If different IRDs would be required, a more difficult scenario.

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"*There will be problems to negotiate in each case*" he adds. "*In theory, one firm has already paid for the cost of multiplexing the various programme channels into the data stream. Before that firm allows a second pay-TV firm to benefit from that multiplexing, they can reasonably ask for a shared costing for that equipment. Simulcrypt can only happen when there is a business level agreement between the two parties sharing the data stream. In some instances, the multiplex* (mux) *vendor* *(supplier) must also give consent even if they have previously been paid and signed off the mux unit. This is because the mux vendors have licensing agreements just as the conditional access firms do. Most people do not realise how much licensing goes on within a digital pay-TV data stream. Virtually every technical segment of the system has been licensed to the original programmer and these rights carry well past the point where the vendor has been paid for the equipment. Just because Australis, for example, owned the mux device that combined their various programme channels into one data stream does not mean Australis is free to use it for a purpose other than the original one. For Optus, for example, to use the mux equipment originally bought and put into operation by Australis requires the approval of the mux vendor.*" **(4)**

This means that sometime after the middle of 1999, it will be technically possible for two (or more) stand alone pay-TV providers to share their programme original hardware but only if agreements are in place with the original equipment suppliers. This will reduce hardware and software operating costs, and eliminate the need for each programmer to transmit identical programme channels that are shared between two services.

And the receivers?

Iles is convinced that before the end of 1999, "*you will not be able to tell the difference between IRDs by their function or technical design.*" He forecasts the recent trend to eliminate conditional access modules (CAM) devices will take over the marketplace by mid 1999. The CAM has been a troublesome work-around sub-piece of equipment for IRDs. The receiver manufacturer designs an IRD that does everything required to process the MPEG-2 data stream to separate video + audio programme channels. The conditional access portion of the data stream is broken out and sent to the CAM. The CAM requires a smart card to function. So as the IRD leaves the factory two parts are missing preventing the IRD from being used in a pay-TV service environment. The *CAM*, which is supplied through the conditional access supplier (such as Irdeto) and the *smart card* (which is supplied by the pay-TV programmer). Until now, the CAM has been purpose-designed to function only with a single conditional access system. In fact, Irdeto designs and manufactures CAMs which are customised to each specific pay-TV programmer customer. A CAM designed for use in Italy, for example, may insert into a receiver in Australia but the CAM software required for Australia differs from Italy. So CAMs are only useful in the pay-TV system they were designed for and so too the smart card issued by the pay-TV programmer.

Early this year the CAM approach began to fall out of favour. European markets require the ability for viewers to subscribe for two or more services and the ideal technical approach was to provide a means in the IRD for the customer to switch from one pay-TV service to another by simply pushing the correct sequence of buttons on the IRD remote control. The common interface (CI) was borne.

Irdeto was caught outside this loop as CI design receivers were created that allowed the viewer to change pay-TV services quite seamlessly by simply removing one smart card from the IRD and replacing it with another. Viaccess, Nagra and other CA systems could now be accessed by changing only the smart card. It did not take long for receivers with two smart card slots to appear eliminating the need for changing cards when changing services; the remote control selects the card and everything else follows.

"*There will be no CAMs at all. The trend in IRD design is for more of the decoding to be done in the software. Until now, MPEG-2 decoding has been predominantly done by hardware* (chips). *As software decoding takes over, the actual design difference between a UEC or Pace or SMS IRD will disappear.*"

4/ Software rights are licensed to equipment users, not sold as a part of the actual hardware. Any portion using software has separate limitations on its use or shared use and hardware buyers may not always be aware that the fine print in the sale agreement prevents them for allowing another programmer to share use of the same piece of equipment.

Iles believes that proprietary CA systems such as PowerVu aside, "*all IRDs will look and function the same within 18 months. The IRD design will follow an open architecture approach with individual boxes functioning for individual pay-TV providers based upon software, not hardware differences.*" The root of this is something called "open TV," a software routine increasingly available in current IRDs (such as the UEC 642, Panasonic TU-DS10). "Open TV" has been designed to allow viewers to move as seamlessly as possible from one data stream configuration to another. An example: The Optus Communications RABS project for rural Australia is built around Open TV architecture. The theory here was to provide an IRD which RABS viewers could utilise for both their outback service and one or more national pay-TV platforms. Open TV is a tack-on, usually including an electronic programme guide (EPG) in the marriage to allow the user to select a programme channel and move to it from any point in the single or multiple bouquet environment. RABS is one bouquet, pay-TV another and while the two may share some common operating parameters, each stands alone in the TV world. By allowing the consumer to move back and forth across the Open TV platform, into and out of conditional access routines, operation of the IRD becomes more like an existing analogue television receiver.

The seamless ability of Open TV is not yet perfected; in fact Optus Communications in selecting their IRDs for the RABS service has stumbled over this challenge since March. The Open TV software is someplace between under development and being refined. Each programmer package has demands upon the way Open TV functions and Optus has not been able to date to complete their own demands for the system. Open TV software version 1.05 is current in UEC and Panasonic IRDs; the level required for seamless change between different services will require a new software version not yet written. Peter Iles on Open TV: "*It will be a part of the normal DVB conditional access routine and Open TV and the DVB descrambling will be one function, processed in the demux chip.*"

Simulcrypt is being first shown to the commercial world at IBC Amsterdam in September. Irdeto has conducted real world tests using terrestrial TV transmitters in Israel. For now it remains a new concept, still unproved in the real satellite world, and subject to both its own operational glitches and the response of competitors. For Irdeto, it is a natural transition from being a stand alone CA provider to becoming a CA partner with the competitive systems. How well it does in the marketplace will determine whether as Iles forecasts there is a one to three year rationalisation of hardware. If he is correct, subject to commercial agreements, it could well become easier for new entrants to get into the digital TV world in a market already dominated by a single player. But not without pressures being applied.

Lacking government intervention - how level is the playing field?

De facto digital standards, created by the first serious pay-TV provider in a geographic area, were probably not visualised by the regulators. Ministry of Commerce spokesman Ian Hutchings in New Zealand remains adamant that their only role is to allocate frequency spectrum and obtain for government the best possible revenue for rental of that spectrum. He disavows any interest in creating transmission standards or helping the broadcast industry select a technology. "*If they own the frequency (under management rights), they can do virtually anything they wish with that spectrum. The only provision is that the use of the spectrum not result in spurious emissions* (interference) *to others.*"

There are two primary concerns with this total hands-off attitude. One, Government actually encourages monopoly development by allowing first entrants to write all of the rules for an industry. Two, with a monopoly established, competition which produces lower consumer costs for hardware and programming never develops. At the end, consumers suffer because deregulation leaves them vulnerable to monopolistic practices.

TAB's Early Flight to Satellite

TAB, operating the Trackside channel on UHF television frequencies throughout much of New Zealand, has managed to negotiate an "early start" via satellite with Sky Network. Trackside is destined to be one of the Sky bouquet channel services in digital form after Sky launches their service later this year (see "Sky Update", p. 11 here).

Trackside via satellite is tentatively scheduled to launch on Monday August 3. The service will be transmitted in analogue format on Optus B1, vertical, (1/2) transponder 3U (upper). This translates to

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a downlink frequency of 12.420 (1120 IF). Sky is also utilising transponder 5 on the same satellite to transmit Sky Sport (12.545) and Sky 1 (12.518) - each, also, in 1/2 transponder format, Videocrypt encoded.

The plan is as follows. Trackside will be in a *non-encrypted* (free to air) format occupying the upper half of transponder 3. The lower half of the same transponder (3L) is scheduled for testing of the first NDS format Sky digital services later in the year. When digital testing is completed, there may be a short period of time (one to three days) during which the analogue Trackside service will be turned off. During that period, Sky will expand the bandwidth of their digital bouquet to occupy all of transponder 3 and fire up their first digital package. In that digital package will be Trackside in digital.

TAB is encouraging TAB offices and sub-offices to install a satellite dish system for the temporary analogue format. A number of TAB offices have already added satellite to receive an audio only service currently broadcast within the transponder 5 service (this audio service will discontinue when the new satellite Trackside launches). The benefits to all TAB offices in having a satellite dish installed now are as follows:

1) The Trackside Satellite Service (TSS) will add new coverage on Monday, Tuesday, and Friday making it a seven day a week service. Additional racing hours will also be available on some midweek nights (see page 10).

2) Those TAB offices with existing UHF (off the air) reception will not have access to the new seven day a week coverage; it will only be available to satellite users.

What is happening here is Sky is creating a super-Trackside service which is intended to speed up the rate of take up of satellite at TAB installations. TABs not electing to add satellite to their existing UHF, in regions where UHF is available, will be competing with those that offer "the full service." And because there will be Trackside coverage on Sky satellite not appearing on Trackside UHF, Sky will be able to collect a monthly fee for Trackside. It will not be considered a free to air service on satellite. Affiliates installing a new satellite dish for the satellite service are being charged $650-$750 (+ GST) for the basic (analogue) dish system. Note that consumers have been paying $650 for the same installation (the difference may be larger satellite dishes at TAB locations than for consumers - an engineering decision based upon ensuring fewer "rain fadeouts" for the TAB installations). In addition to the installation fee, there will also be a $650 "refundable bond" for the satellite receiver (note that motels have been paying as much as $1,000 "bond").

Sky will also be charging TAB outlets $40 per month for the Trackside analogue satellite feed. However, the satellite feed will *not* be encrypted. Consumers with satellite dishes will not be told about the newly available Trackside interim analogue service although there is nothing to prevent consumers from retuning their existing analogue receivers to add Trackside reception (see page 14, here). Note Trackside is describing the interim service as "*restricted to TAB agencies and sub agencies*."

There will be confusion simply because of that claimed restriction. The public is being told that during "*stage two, the service will be available to all viewers*." Stage two is TAB's term for the launch of the digital satellite service. TAB literature reports stage two is scheduled for November, possibly an optimistic claim.

The options:

1) TAB already equipped with a satellite dish. A service call fee in $50 range to retune the receiver and add the new free to air analogue service (see "Uniden instructions," page 14 here), and $40 per month for the Trackside satellite service

2) TAB without satellite dish. Installation charge of $650-$750 plus additional $650 refundable "bond" and $40 per month. If the TAB wishes more than one satellite receiver (to allow Sky Sport reception simultaneous to Trackside satellite), an additional refundable deposit plus added installation fee (this will vary with complexity of installation).

3) TAB that does not opt for satellite dish. No access to TSS, no new charges for TAB service.

4) TAB with existing UHF Sky service, adding TSS. Installation fees as 2) above and an increase in monthly fees of "50% of the base subscription."

The expanded TSS service will be as follows:

Monday and Tuesday - noon to 7pm (if there are NZ meetings) (taped repeats to 11pm)
Monday and Tuesday - 1.30pm to 7pm (if Australian meetings) (taped repeats to 11pm)
Wednesday and Thursday - noon to 7pm (noon to 11pm for night trots)
Friday - noon to 11pm
Saturday - 11AM to 11PM
Sunday - noon to 7pm (taped repeats to 11pm)

Trend in TVNZ Annual Reports

Distribution of the TVNZ Annual Report provides an opportunity to compare corporate mission statements as they have changed during the relatively brief period starting with 1995. Quoting from three consecutive annual reports, we find:

1995:

"What long-term trends are likely to affect TVNZ? The main trend is the integration of the broadcasting, telephony and computer industries. The challenge for TVNZ is to maximise our competencies in the areas of TV production, programming and distribution. In distribution, wireless will remain a significant delivery system for television because of the high cost of installing cable for our small population."

"While some cable television operators have started business in New Zealand or are planning to, they are expected to have little long-term impact on the free-to-air market. Their investment and operating costs are likely to be too high relative to potential income. Consumer appeal is highly doubtful, given the quality of TVNZ's free-to-air channels."

At no point in the 1995 Annual Report was there mention of either Sky Network nor the conversion from analogue to digital transmission techniques.

1996:

"During the year, considerable time was spent working with interested parties to achieve a change in ownership of Sky Network Television. TVNZ viewed the INL/News Corporation/BSkyB move to become significant shareholders in Sky positively. It is disappointing that this proposal is not proceeding (28 February 1997)."

"Our biggest challenges were the cost of sports and other programme rights, competing forms of entertainment, and the tightening advertising market - particularly in the second half of the year. The sports rights issue will remain with us as pay-TV grows world-wide. Strategically, the Company must be in a position to take advantage of terrestrial pay-TV expansion."

"With the high rate of technological change through the industry, the company has devoted significant resources to research and development. Of particular note is the design of a digital distribution network (DDN) capable of delivering multi-video channels and large amounts of data using the existing network infrastructure."

Once again, there was no mention of the need to deal with terrestrial facility conversion to digital transmission techniques.

1997:

An unusual "half year interim report" was issued by TVNZ on August 27, 1997 for the year 1997. It said -

"Sky Network Television Ltd. in which TVNZ has a 16.3 percent shareholding, increased its subscribers to over 300,000 in the last six months. The pay-TV market is an increasingly important one and we view our stake in Sky as strategically important. The company has signalled its desire to *increase its stake in Sky* and negotiations on this are continuing with other Sky shareholders."

"Net profit after tax at $14.2 million is 38 percent down on last year's result. Turnover was $216.5 million compared with $210.2 million for the same period last year. The small increase reflects the fall in advertising revenues offset by the Distribution division's improved performance."

And again, there was no mention of the likely effects from a migration to digital transmission techniques.

1997:

"TVNZ's 100%-owned subsidiary Broadcast Communications Ltd (BCL) is positioning for the introduction of digital technology and completed a successful trial in 1997."

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"As part of the public sharemarket float of Sky TV this year, TVNZ took the opportunity to realise part of its investment in the company, by *selling down its stake* to 12.61%. We continue to have representation on the board."

"The television market is developing at a rapid rate. TVNZ faces challenges like never before. We see the next five years as being a crucial phase in the advancement of technology as it affects the television broadcast medium. The replacement of analogue technology by digital will change the television business profoundly. Ultimately, free to air television will no longer dominate the market. Pay or subscription TV and, to a lesser extent, the Internet, in its various forms, will seriously challenge the free-to-air broadcasting market. With digitalisation will come a proliferation of channels (potentially hundreds) as satellite capacity with digital compression technology removes the constraints of spectrum availability and the cost of production and transmission comes down. With this digitalisation will come the concept of the set-top-box, which will be connected to consumer's TVs and become effectively the control centre for a raft of services to the home, including the traditional free-to-air use of the television as well as home shopping, banking, and video telephony. Those operators who are positioned to influence the standards and access conditions of the set-top-box will have a competitive advantage in the digital environment. "

"TVNZ is evaluating a number of options to progressively expand its core business including niche, free-to-air channels, Pay TV and interactive services using a range of delivery mechanisms, as well as continuing to provide New Zealand's two premiere free-to-air channels via terrestrial transmission."

"In a television world dominated increasingly by niche channels and packaged programming, those channels which can deliver an identifiable kiwi flavour are the future."

"The rapid advances in digital technology, which bring significant opportunities for meeting changing viewer and market demands, offer unique opportunities for the Company during the coming years. TVNZ's long history of serving the New Zealand viewer combined with a thorough understanding of the opportunities to exploit digital technology in a free-to-air broadcasting environment will position the company well for a solid stake in the future of the New Zealand broadcasting environment."

Summary:

In the three year period:

1) Corporate revenue rose from $391.4 million in 1994 to $427.5 million in 1995, to $458.0 million in 1996 and fell to $451.5 million in 1997.

2) Net profit was $50.9 million in 1994, $43.1 million in 1995, $60.6 million in 1996 and $30.0 million in 1997.

3) TVNZ launched a four station regional television service (Horizon Pacific) in March (1995), added a fifth outlet in Christchurch in November. In July 1996, TVNZ converted the Horizon Pacific stations to broadcast a satellite feed originating at MTV Europe. TVNZ closed down the MTV network in 1998 after buying our Auckland music TV competitor Max TV and shutting this station down.

4) TVNZ reduced its stake in Sky Networks from 16.3 to 12.61% after announcing in the 1996 Annual Report its intention to increase its stake in Sky.

Status of Free-to-Air Broadcasters within Sky Network Digital Bouquet

One of the most closely held corporate business secrets in the television business is the plans at Sky Network TV to offer some or all of the current commercial free-to-air terrestrial networks within its end-of-year digital bouquet.

Unofficially, contracts designed by Sky are reported to be in the hands of TVNZ (for TV1 and TV2), CanWest (for TV3 and TV4) and Prime TV. Equally unofficially, reports that Sky is proposing to offer up to five terrestrial TV services within a special "free to air package" of channels with no direct satellite viewing charge. What is not known, unofficially or otherwise, is what level of payment will be charged to satellite viewers who wish to install equipment solely for the purpose of viewing the free-to-air channel group (i.e., who will not initially commit to becoming a Sky package subscriber as well).

The mechanics of the launch of digital remains a difficult challenge for Sky. Here are the reasons.

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1) Sky has one transponder in use carrying Sky Sport and Sky 1. There is no spectrum space within this transponder for additional channels. Sky requires this transponder for its digital expansion, but cannot terminate the analogue transmission of Sky Sport and Sky 1 until both services are available in digital form and there has been a reasonable period of time to allow existing analogue subscriber systems to be updated and replaced with new digital decoders.

2) A second transponder is scheduled to go into "half use" August 3 when Trackside Satellite Service begins. This will leave an unused second half of the same transponder where Sky will begin to implement its digital package. The spectrum space available in the unused portion of the Trackside Satellite Service is capable of supporting a maximum of 6 digital TV programme channels (5 is more likely).

In effect, Sky has two full transponders available and 1.5 of these are tied up with analogue services that cannot be taken off the air (and replaced with digital) until an equivalent digital service is operational. In that 0.5 transponder, Sky must activate an initial digital service that will include as a bare minimum Sky Sport and Sky 1.

3) When Sky Sport and Sky 1 are operational in the 0.5 transponder, then digital decoders can be retrofitted in place of the 12,500 existing analogue units now in the field. The likely time frame for this conversion is during November and December. **(1)**

After the 12,500 analogue decoders are replaced, Sky will then be able to shut down the Sky Sport and Sky 1 shared analogue transponder service and initiate a new full transponder digital service. From 5 or 6 initial digital programme channels in the 0.5 transponder space available, Sky will then be capable of transmitting 15 to 17 programme channels in 1.5 transponders. In this group Trackside Satellite Service in digital form will be available. Immediately, the TAB located interim analogue units that go into service during August can then be replaced with digital units, and the 0.5 transponder width interim Trackside analogue service closed down.

4) At that point Sky will have the use of two full transponders with a maximum digital programme capacity of 22. The line-up of the (up to) 22 programme channels remains a closely held business secret at Sky although some programmer leaks at least suggest some of the services that will be included.

a) *Certain* to be included: Sky Sport, Sky 1, Sky Movies (the present UHF distributed service), CNN + Sky News, EPG (electronic programme guide and preview channel), Hallmark Family Movies, Trackside Satellite.

b) *Likely* to be included: UK•TV, TNT + Cartoons, (Fox) Sport 2, fX (a Fox cable network), Fox Kids, Channel [V] (music), Discovery.

c) *Possible* to be included: National Geographic (which may replace Discovery in the likely to be included list above), World Movies (English subtitled foreign films), TV1, TV2, Prime TV.

d) *Marginally* likely to be included: TV3, TV4.

The total here is 21 (or 20 if Discovery is dropped in favour of National Geographic). Missing - a Maori speciality channel, a religious channel, an adult film (after 8.30PM) channel; this could also be packaged on top of the EPG channel or as a partner to the Fox Kids Channel although it would only be seen by homes subscribing to its explicit content. Also missing, some form of "Christian" oriented television which has been actively promoted to Sky. Note there is no sign here of non-English language programming (setting aside the possible inclusion of a part day Maori service channel).

Murdoch satellite in Europe often combines two, three or even four separate "programme channels" onto a single dial position granting each channel some number of hours per day. BSkyB is frequently criticised for this practice because in promoting their package, BSkyB totals the number of channel content names (such as ending up with "30 channels" which are located on only 18 real "programme channels.") There is every reason to expect similar shared services here as well.

When the initial two full transponders are operational, Sky is in line to take a third transponder after June 1999. This is scheduled to be used to deliver pay-per-view movies and pay-per-view sporting events.

1/ Some internal Sky sources claim 17,000 satellite installations are operational. The same sources believe Sky will be converting analogue to digital through mid to late January.

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TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a dollar ...

July 29, 1998 ◆ VOLUME 98-7-50

Satellite TV & Radio

SPACE TV systems bouquet on Intelsat 177 (Ku, 12.612 Vt) has turned off conditional access and is reported with 9 NTSC video format Taiwan originated cable TV service channels, one PAL format channel for Thailand's TV5 (previously FTA), and 9 conditional access apparently audio service channels. Not present: Formerly available Exxxtasy and True Blue Canadian origin adult pay-TV channels which were being distributed to US bases in Korea and Japan (in CA mode).

TVSN financial failure (now in hands of receivers) has resulted in shutdown of AsiaSat 2 service (3660/1490 Vt) and conversion of PAS-2 service (3743/1407 Vt) from NTSC to PAL format feed. The PAS-2 service may be gone by the time you read this, as well. TVSN admits there expansion into Asian markets has been financially risky, that costs have exceeded revenue, and they are restructuring the company hoping to find a balance that will allow them to continue to serve Australia and New Zealand at a minimum. This note: If PAS-2 service shuts down, look for improved CCTV digital service levels on same transponder. The analogue/digital transponder sharing from two separate uplink locations never did work very well!

HBO service, limited to cable TV affiliates in Taiwan and Philippines, carried on Palapa C2 (4000/1150Hz) is scheduled to shut down and move to ApStar 2R and digital feed August 15th. This service was originally created for Indovision DTH pay television service, then home subscribers were shut off from service in April. This Palapa C2 transponder is one of four that are especially powerful throughout entire satellite coverage region including New Zealand and Australia. There will be high interest to see what service (if any) replaces HBO here.

PanAmSat, the satellite operator, increasingly difficult to deal with in a space spectrum seller's market. There may be some heavy changes coming including CNN moving off of PAS-2 in favour of Orion or Intelsat for linking between North America and Asia.

RABS update. One-off UEC 642 pricing is (A)$875; prices decline to range of $700 at maximum volume discount. Aurora CA card is free to those holding RTIF voucher, (A)$50 to others. NSW firm claiming to have copy of 15,483 name and address listing of all former Plessey B-MAC owners is marketing UEC 642 direct to consumers. Panasonic IRD TU-DS10 was expecting letter of approval from Optus Communications as CTD goes to press; letter result of retesting of IRD in mid-July.

Echostar 4 testing at 127W has been completed and satellite is being moved to 148W. This Ku-band LHC satellite is intended for pay-TV and Internet operations to Hawaii and west coast of North America; there is at least the possibility that some signal spillage will make possible reception in the central, western and south Pacific as well. Formal turn-on date is September 1 but testing should be underway as this is read. The satellite suffered when only partial deployment of solar panels occurred as bird was made operational, reducing amount of power available to satellite. Practical effect is fewer operating channels will be available from 148W location. In other 148W news, USSB (pioneer DTH broadcaster in USA) has turned back licenses covering 8 transponders at this location. Firm had original plan to create DBS service for western USA "and Pacific Rim" but has now concluded, "*this is a business plan that does not make any sense.*" USSB had scheduled a purpose-built satellite from Lockheed Martin for this location.

$7.50 satellite receivers? Supplier advertising scheduled in SatFACTS magazine for August 15th offering sizeable quantity (limited quantity per buyer) of name brand satellite receivers for $15 - a pair. Catches? Very few; receivers as is, where is in Australia.

AsiaSat 3S (or R depending upon which list you read) for 105.5E is scheduled to arrive at Baikonur Cosmodrome in Republic of Kazakhstan in late January. Scheduled launch date remains +/- mid-March 1999.

Sinosat 1, scheduled for 110E, had scheduled lunch date of July 18th with Chinese Long March rocket.

PanAmSat PAS-9, originally intended for 72E, will now go to 95W to replace 3R temporarily at that location following failure of Galaxy IV.

Orbital Sciences company in USA is expanding its assembly line facility to build and test satellites at Loudoun, Virginia. Firm plans to add 1,500 new employees, and 175,000 square feet of new production space

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The (not altogether user friendly) Instructions to Retune Uniden Receivers for Trackside Satellite

These instructions are being supplied to Sky installers scheduled to work on the conversion of existing TAB Trackside audio receivers to receive the new expanded satellite service.

Take note prior to starting:

If too large a delay is incurred between pressing keys (more than 5 seconds), receiver will revert back to programme number (i.e. P004). This creates the likelihood of accidentally changing channels halfway through set-up. NB: As these parameters are set on a per channel basis all settings will be lost; hence the recommendation to store settings stage by stage as opposed to once at the end is recommended. If this does happen, reset parameters from where store was last pressed.

1. Video Parameters

Select P004 - either ch up/dn key or enter '0' '0' '4'

Press [Video] key and enter directly 1120

Press [< arrow] while still in video menu and set B/W to VIDEO WIDE with up/down arrows (Vi.d.o = narrow, V.id.o = wide)

Press [< arrow] from Video B/W mode and set to LOW LEVEL with up/down arrows (V.lo)

Press [<arrow] from Video level mode and set to UNLOCKED MODE with up/down arrows (unLo)

Press [store] TWICE (display will; flash to acknowledge)

2. Audio Parameters

press [Audio] key and enter '6' '6' '0' directly (6.60 MHz)

Press [<arrow] while still in audio mode and set to MONO WIDE with up/down arrows (mo.no = narrow, m.on.o = wide)

Press [< arrow] while still in B/W mode and set de-emphasis to 50 uS with up/down arrows (50u)

Press [Store] twice (display will flash)

3. Decoder Parameters

Press [dec] key and set audio to INTERNAL with up/down keys (ad-i)

Press [<arrow] while still in Dec mode and set to INTERNAL VIDEO (Vd-e=ext, Vd-i=int)

Press [Store] twice (display will flash)

If no picture and/or sound, check following parameters.

Polarity:

Press [LNB] then [<arrow] and ensure polarity is set to VERTICAL with up/down keys (vEr)

Press [Store] twice (display will flash)

C/Ku:

Press [C/Ku]; display should be Ku, if display is C-band (pix looks unlocked or rolling), press C/Ku again

Press [Store] twice (display will flash)

LNB SW:

Located on back of receiver must be ON to power LNB

To check all parameters are stored properly - press ch up to down key and back again and confirm correct operation.

space4by year 2002. They built partially functional Indostar S-band satellite now resting at 107.5E and hold option contract on two additional Indostar satellites.

ODU - latest addition to industry shorthand.. Out door units being produced with Philips Holland combine normal offset (quasi-parabolic) antenna and LNBF into single package. Advantage? One source for antenna and LNBF, integrated construction and faster assembly. Philips claims, "*Quick and easy mounting in 2 minutes*" for ODU versions with reflector surfaces ranging from 54 to 88 cm in size. Unit claims transport, packaging, ease of installation advantages but pricing is not known at this time.

Irdeto Consultants Pty Ltd (Asia Pacific Division) offices in Sydney have moved. Now Suite 1402, 275 Alfred Street, North Sydney NSW 2060 (Australia); tel 61-2-9957-3388 and fax 61-2-9957-5188.

Opac Pty Ltd facility in Sydney area have moved to brand new office complex and factory facility, 7 minutes south-west of Sydney. New address is 24 Bosci Road, Ingleburn NSW 2565 with tel 61-2-9618-5777 and fax 61-2-9618-5077.

New digital sources. PAS-2, 4146/1005 Hz with symbol rate of 1.674 and FEC of 3/4; probably not video. AsiaSat 2, Star TV has restarted 3700/1450Vt in CA format with Msym 27.500 and FEC 3/4. Channels present

Status of Rationalisation in Australia - Left Hand vs. Right Hand

Ex-Galaxy pay-TV subscribers continuing to receive (without charge) Austar's 18 channel Optus B3 service are being advised that encryption of the service could begin "at any time." In fact, on July 22 World Movies and Comedy Channel were encrypted for approximately 24 hours. Sorting out the reason why the Irdeto conditional access system has not previously been turned on is very difficult. When Foxtel purchased ownership rights to the universe of 55,000 customer location Galaxy IRDs early in June, all ex-Galaxy subscribers received a letter advising them a second letter offering an "interim Foxtel service" would be forthcoming by mid-June. In fact, the second letter outlining proposed Foxtel interim service arrangements and offers did not begin arriving until July 9th. By July 22nd, an announcement channel (13) within the Austar bouquet was advising ex-Galaxy subscribers that encryption of the service "could begin within a few days time." The text was:

"OFFICIAL NOTICE - Important Message for AUSTAR & Foxtel Customers"

"All Austar and Foxtel customer accounts must be current to ensure continued service and receipt of the September programme guide."

"For those Austar customers whose accounts are not current, to ensure continued service please contact Austar on 132 432. All other Austar customers need not be concerned as your service will not be affected."

"Former Galaxy customers must contact Foxtel on 1 300 360 646 to establish an account to ensure your service will not be interrupted. To assist with processing, please have your Smartcard and Decoder serial numbers available."

Supporting that were press releases circulated in Australia.

Rumours as to the reason why the Irdeto system has not been turned back on (thereby "securing" the transmissions) were many and varied. You will recall that late in May, pay provider Austar and would-be pay service provider Optus announced their purchase of the Irdeto CA license for Australia. It was assumed at the time control of the Irdeto system would pass to the "new owners" very quickly. Rumours, not substantiated, suggest there are both legal (as in ownership rights issues) and technical (as in gaining access to the Irdeto package control system) problems. Other unsubstantiated rumours suggest negotiations between Foxtel and Optus + Austar have delayed the return of the Irdeto system. Foxtel required some period of time to contact its 55,000 ex-Galaxy subscribers. That Foxtel knew who they were and where they were is verified by the early June letters sent and received. Why Foxtel waited five weeks to send a second letter which specifically asked ex-Galaxy subscribers whether they wished to continue receiving service through Foxtel is not so clear.

Foxtel's mid-July letter tells ex-Galaxy subscribers the monthly fee will remain the same as it was with Galaxy ($49.95) and that the charges will be retroactive to July 1 even though scrambled transmissions had not been resumed. There was an immediate backlash on Internet from people who were not willing to pay Foxtel for a service which continued in a free to air mode. A typical Internet posting read:

"When I rang Foxtel on June 15th, they informed me that the service would scramble on July 1st. On the 2nd of July I rang again to find out when the service would scramble and was informed it would do so shortly. I was told at that time I would not be expected to pay for the service until it was scrambled since as long as it was free-to-air others would be receiving the same service without paying. Now all of the rules have changed - Foxtel is asking us if we wish to continue the service and demanding that we pay for it from July 1st even if it has been (or continues to be) free-to-air. This sucks!"

CTD understands Foxtel has in place a contingency plan that involves their use of PanAmSat PAS-8 if and when it launches in October-November. Foxtel has negotiated a contract with Comet Installations (Kingsley Mundey at 61-2-9647-3101) to repoint the universe of (55,000) ex-Galaxy dishes from Optus B3 to PAS-8. Comet, however, believes this to be a contingency plan that will go in effect only if there is not a rationalisation of the Australian pay-TV industry before Foxtel is forced to make the PAS-8 decision.

What rationalisation? Financial analysis experts in Australia are increasingly suggesting Optus cannot conduct a public float of its stock as long as the pay-TV issue is unresolved. There are pressures being applied to Optus - if they really are serious about a float - to shut down their total pay-TV project which is seen as a market-destroying financial drag to Optus.

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Left Hand / Right Hand Rationalisation - continued

This is a new form of pressure on Optus, perhaps orchestrated by Foxtel which would like to see Optus drop out of pay-TV as well. Remember that Optus went into pay-TV to offer a combined television and local telephony service as a competitive tool against Telstra. The telephony portion has not been successfully deployed to date and the cable TV segment lags significantly behind the penetration of Foxtel.

Let's take that a step further. If Optus would somehow become convinced to back out of pay-TV, the obvious benefactor would be Foxtel. There are slightly more than 200,000 claimed cable subscribers for Optus Vision at this point and the technical pieces in place to launch a direct to home satellite service. There is also more than a billion dollars in investment by Optus in the pay-TV venture to date.

If Optus left pay-TV, both the cable and the satellite delivery mediums, that would allow Foxtel to become the sole major player in Australia. With Optus out of pay-TV, Foxtel could then take over the Optus position with Austar in the satellite DTH service area. This would eliminate any need for Foxtel to establish a competitive DTH platform using the PAS-8 satellite; it could then "partner" with Austar and utilise the existing B3 satellite transponders for both providers.

What this would do to Optus -the corporation- is less certain. With more than a billion dollars invested in pay-TV (primarily in their cable TV plant), how would Optus come out whole? Their objective is to proceed with a public float. Financial managers are warning Optus that if they continue to dabble in pay-TV, their public float will be seriously weakened. On the other hand, unless they can get back a major portion of the one billion dollars already invested in pay-TV, their public float will be flawed anyhow.

If Foxtel somehow hands money to Optus to get them out of the pay-TV world, there is a fine line between buying the assets of Optus pay-TV and bailing Optus out such that they can go ahead with their public float. In other words, the more Foxtel pays for Optus pay-TV property, the more likely Optus is to manage a successful public float. Foxtel partner Telstra would much prefer to see Optus so severely wounded by their entry into pay-TV that there is no successful public float.

Which puts the Foxtel vs. Optus negotiations for further rationalisation of pay-TV in Australia in an interesting posture. We have a willing buyer (the "fox" portion of Foxtel) and an unwilling buyer (the "tel" portion of Foxtel). We have a confused seller; they are perhaps damned if they continue in pay-TV, they are equally damned if they get out of pay-TV and are forced to write-off their massive pay-TV investment.

Into all of this wrap the ongoing uncertainty of how, when and where Foxtel will become a "real" satellite pay-TV operator, and the less than third-party relationship of Austar. If Optus Vision falls, Austar becomes the next duck in line for the Foxtel corporate hunters.

On a daily basis, the Internet discussion groups continue to grind out opinions and reports of how ex-Galaxy subscribers are finding Foxtel to deal with. This exchange typifies what is circulating on Internet these days.

"Lately my ex-Galaxy dish system has been playing up. The signal drops out in a random fashion and I felt obliged to call Foxtel and ask what could be done about this. The fellow I spoke to on their toll free number was not crash hot. He reminded me that I should consider the favour that Fox has done for us ex-Galaxy subscribers by keeping the service going to our homes. I reminded him that, (1) They had my agreement to pay them $49.95 for the month of July even though the service continued free-to-air, (2) they bought me from Galaxy and I was not consulted about being 'sold' to them, (3) The TV Guide they provide is created for the cable viewer and for satellite use it stinks, (4) We have been left in limbo for months, never certain day to day the service would continue, all because they were very poor at communicating their plans, (5) and the system seems to be faulty, which is the reason I called in the first place. His response was that I should take it as it is or ask them to take the equipment away. He then suggested that if I was that unhappy, I would be better off leaving their service. I guess he didn't want to know the truth. He repeatedly asked me if I would be happier if they scheduled my equipment for pickup. And I was only asking them if there was something that could be done to correct the frequent dropouts in reception. He simply refused to even deal with my honest, legitimate report of a system failure. In effect, take it as it is and shut up and get off our system. Whew. What a corporate attitude!"

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are ESPN Taiwan, ESPN Philippines, ESPN Asia, Star Sports Asia and Star Sports South. On Star TV AsiaSat 2 3740Vt, CNBC and NBC Asia have been replaced in CA bouquet with Star Mosaic and National Geographic Channel Asia. PAS-2, 3778/1372Vt - testing is a new (to go into service sometime late in August) middle-east feed through North America to Australia. Tests have been at an SCPC rate (6.618, 2/3) as well as at a higher MCPC rate (23.695, 7/8) with test cards and a programme channel idents for the following: 1) Art America, 2) ART Movies, 3) LBC America, 4) RAI Int America, 5) LBC Australia, 6) ART Australia, 7) RAI Int Australia, 8) MCM The Music Channel.. What is this all about? You read it here first - Optus Aurora plans adding up to 3 Italian channels (as well as other ethnic services) before the start of the year which will allow ethnic viewers to gain access to home country television. This PAS-2 feed (which will probably not remain FTA, and will be reduced in signal level when operational) is the main feed into Australia for these new channels. Other: One, sometimes two strong digital signals on PAS-2, Ku, in region of 12.715 GHz where Foxtel was previously testing. No identification as of press deadline.

Baccarat Game Channel, intermittent on Intelsat 180E, is back again: 4028/1122RHC, MPEG-2 FTA with Msym 2.702 and FEC of 5/6.

Russian Gorizont satellites. Close measurement of satellites at 140E and 145E reveals former requires tracking every hour while 145E requires more frequent tracking at 10-12 minute intervals (with 4m dish).

MegaTV (Palapa C2, in CA mode) is in fact still operating (question raised in July 15 SatFACTS). Latest channel loading from (conditional access) Indovision Palapa C2 (3500/1700Hz) is (1) Cinemax, (2) Hallmark, (3) Discovery, (4) CNN, (5) TNT/Cartoons, (6) ESPN, (7) BBC World, (8) CNBC, (9) National Geographic, (10) Hallmark [repeat], (11) HBO, (12) Fox News, (13) Citra TV, (14) Phoenix, (15) Channel [v] Asia, (16) Phoenix, (17) Star World, (18) Star Sport, (19) Film Indonesia, (20) Star Movies.

GWN (Perth) has been added to the Optus Vision RABS bouquet (12.407 Vt, B3) against the wishes of the telecaster. Under section 212 of the (Australian) Communications Act, Government has the right to order such carriage even without telecaster approval. GWN has been a holdout from the Optus operated digital service, having previously chosen the Telstra backed Scientific Atlanta PowerVu service on PAS-2. In western Australia, there are between 1,620 and 2,150 unused RTIF vouchers indicating the number of B-MAC viewing sites which have to date not made a decision about which of the two competitive services (GWN via PowerVu or GWN via Optus) they will select. During the week of July 20, 800-900 UEC 642 IRDs were shipped to Perth by distributor Nationwide Antennas; approximately half of these are scheduled for the Westlink (WA Government) satellite distribution system. RTIF vouchers (Government subsidy to assist in paying for the new digital IRD/decoders) continue to be a controversial subject; officially, Optus only allows use of the voucher for purchase of UEC 642 IRDs. Two other IRDs have now been approved by the Optus engineering department; the Panasonic TU-10DS and a new model from Sun Moon Star (SMS). Optus Engineering completed re-analysis and remeasurement on the Panasonic unit the week of July 20th in Sydney while the SMS IRD is said to have just completed Irdeto approval testing in Hoopdorf (Holland).

DirecPC, Hughes Network System satellite to home (or office) Internet delivery system, has grown to 60,000 subscribers spread throughout North America, Asia (primarily Japan), Europe, South America. There is a surprise here - that so much money has been invested which to date has attracted so few customers. DirecPC is on further expansion path that includes making service available in Australia and Pacific within 12 months.

DirecTV has grown to 3.6 million US subscribers while original supplier Thomson/RCA has shipped 5,000,000th home dish system. First system sale on June 17, 1994 was in state of Mississippi; current generation units are sold in North and South America, Spain and Japan.

Interesting numbers. In small town of Roseburg, Oregon, local cable operator is claiming, because DirecTV penetration exceeds 15% of all homes in community, they should be freed of federal rate regulation rules. FCC allows cable firms to have freedom in setting their cable rates only where MMDS or DTH is 15% or greater in community. Studies by non-affiliated research firms suggest DTH penetration may be as high as 21% in Roseburg. DirecTV maintains most of their subscribers are in areas adjacent to community where cable is not available while cable operator claims contrary. Proposal to do visual house by house count of satellite dishes to settle penetration squabble hinges on someone paying estimated (US)$10,000 fee for formal house count of 7,595 residences.

Primestar direct to home pay-TV satellite service in USA has churn rate of 3% per month. The competitors have a churn rate under 1.5% per month. The difference may be that Primestar allows new subscribers to lease equipment, become connected for a fee that averages under (US)$100 while competitors require consumers to purchase equipment - plus year's service in advance (with a total cost near US$500).

Japanese DTH pay-TV numbers. DirecTV began service last December, now has 145,000 subscribers. SkyPerfecTV which is merger of original PerfecTV and April start-up of Murdoch's Sky Japan now has 755,000 subscribers. Japanese sources are suggesting rationalisation to a single firm is being planned.

Noted author fined. EchoStar VP Brent Gale, co-author with Dr Frank Baylin of large number of "how to" books relating to satellite TV, has agreed to finding of American Securities and Exchange Commission (SEC) he

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There are NO Restrictions on Pay-TV Operating Territory in Australia

When Australis/Galaxy went off the air in May, ex-Galaxy subscribers found themselves able to continue receiving a slightly modified bouquet of programming through the Austar service established as a replacement for Galaxy. At the time, it was widely reported in the Australian press (and we repeated it here) that Austar's temporary service to ex-Galaxy subscribers was possible because of a "temporary relaxation in Australian rules." The rules in question relate to whether Austar, operating pay-TV delivery into rural areas via satellite, has the legal right to actually take on as customers pay-TV viewers located in metropolitan areas. The belief was - in error it turns out - that the Australian regulations prohibited Austar from serving ex-Galaxy subscribers on a commercial basis because the ex-Galaxy subscribers were largely located in city areas which Austar had no license to serve.

CTD went to the Department of Communications and The Arts and received a response dated 17 July from Beverly Hart, Assistant Secretary for the Licensed Broadcasting Branch of the Ministry. In her letter, Ms. Hart wrote:

"The pay TV licenses held by all of the existing operators are national licenses and entitle the licensees to delivery pay TV service **anywhere** in Australia. Pay TV licenses are readily available from the Australian Broadcasting Authority upon payment of a small administrative fee. The areas in which any of the existing pay TV operators or any new operators offer a service is a matter for their commercial judgement."

Austar has repeatedly told ex-Galaxy subscribers it cannot accept them as customers because they were license restricted from doing so. This is plainly not the case, and Austar has been using this 'story' to cover their real reason for refusing to accept ex-Galaxy subscribers. And that is? Agreements worked out between Austar and other pay TV operators (including Optus and Foxtel) to NOT intrude into metropolitan regions with their service offering. In return for? Probably in return for Foxtel and Optus allowing Austar to purchase from them and resell programming which Austar needs to serve its primary rural subscriber base.

heand his wife should pay a monetary fine because of alleged "insider trading." The Gales have agreed to pay (US)$13,282 after SEC claimed the pair purchased additional shares in EchoStar based upon their knowledge of merger with News Corp. The merger fell through, but stock gains occurred and fines followed.

US Government Department of Justice has called Hughes on carpet for releasing to Chinese their analysis of why rocket launch of original Apstar 2 satellite failed. Under terms of law allowing US firms to utilise Chinese (Long March) launch facility, US firms are not allowed to "transfer technology" to the Chinese. The purpose of this law is to ensure Chinese do not gain ability to create more perfect launch facilities with US help. The law allows US firms to contract for launches, but not to share information beyond launch phase. When Ap 2 failed, Hughes analysis determined cause and firm in turn told Chinese how their launch rocket might be reconfigured to avoid future failures. Department of Justice claims this is violation of non-technology transfer law.

Digital TV & Radio

Australia has rejected American HDTV (ATSC) system in favour of European Digital Broadcasting system. Decision has confused Americans as Australian Government had previously indicated it did not want digital terrestrial television to become a short-cut to multiple programme channels, opting instead for true high definition television. American ATSC system is better suited to HDTV than European format, which was designed primarily to allow two or more programme channels to be simultaneously and independently transmitted. Taiwan, meanwhile, has selected ATSC system becoming second Asia country (after South Korea) to do so. Australian decision remains to be formally approved by Ministry of Communications, but was backed by all Australian terrestrial broadcasters.

Japanese Ministry of Posts & Telecommunications has reset terrestrial digital television conversion date: from 2000 to 2003. Japan's broadcast industry had complained it would not be able to meet earlier conversion date.

MTV Networks in USA has chosen General Instrument (GI) Digicipher digital transmission system to reach affiliates. Bouquet will have ten operating channels.

Real world results. With number of digital, HDTV, stations now on air in North America now passing 25, the opportunity for a wide range of operating frequencies (54 through 890 MHz) in a widely divergent set of terrain conditions has produced refined data on reception problems. Among those now highlighted: If the digital

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channel is operating on a channel adjacent in frequency to an existing analogue signal, the TV tuner in the digital TV set must be significantly more selective than in prior analogue only TV sets. If the signals are bouncing from terrain, buildings and arriving at the receive site with multi-path distortion, the TV tuner must have an "adaptive equaliser" circuit that effectively ignores the reflected signals. "It is not simply a matter of installing bigger antennas to gather more signal" writes a recent report, "the issue is correcting the signal and removing the errors."

USA firm, Unity Motion, hopes to become premier provider of HDTV via satellite to home dish systems with initial three channel service scheduled to launch in September. Using uplink in Seattle (Washington), firm did nation-wide demonstration in USA on June 23. Firm is creating HDTV feeds to satellite (consumers will require 36" dishes to receive the transmissions) largely to create a market for its line of HDTV monitors and a companion line of HDTV IRDs which will apparently be sourced from Samsung.

Animal Planet service., launched into Asia on June 26, is studying possible expansion into (south) Pacific as well. Service includes made-for-network strip and special programming, does not (as rumoured) consist only of materials previously shown on parent Discovery. Initial launch via PAS-2 (California bouquet, programme channel 8 - CA) was to estimated 400,000 cable viewers in Japan, Papua New Guinea, Philippines and Thailand.

Consumer Electronics

WalkDog? Sony has demonstrated android dog using memory cards for software directed action patterns. On verbal "walk," "sit," "roll over" type commands, dog follows instructions. There is more. Buy two and the pair will "play games" also controlled by verbal human commands and memory software. Target market date is 2000. Sony representative described advantages as, "*It does not eat or poop on the sidewalk.*"

Sony paid (US)$100,000 to place 115 foot / 35 metre banner promoting Sony Entertainment movie Godzilla plus new 3.1 pound "Super Slim" notebook PC across New York City Grand Central Terminal building.

Sony with egg on face. In highly promoted introduction at London conference, Sony personnel from computer and television divisions explained virtues of two new product lines which are being introduced into eastern European market simultaneously. Major benefit, they said, was ability of Sony PC to do editing functions between PC and new digital camcorder by downloading camcorder recorded signals through IEEE 1394 connection. With digital video in PC, they explained, user can edit and manipulate video and then send edited version back to digital camcorder for playback and transfer to analogue tape. It all seemed so flawless until Sony personnel were asked "*where, on the digital camcorder, does one find a digital input jack.*" In fact, the digital camcorder being sold in Europe has no such input. Why? There is a ten percent tariff levy on any camcorder with a video input jack because this pushes it into a VCR classification. Sony apparently left out the jack to save on the tariff levy, but forgot to alert the sales team conducting the show and tell. Ooops.

Piracy of CD and tape products cost music industry an estimated (US)$5 billion in 1997. Watchdog group claims 1/3rd of 1.5 billion cassettes and 350 million CDs were illegal duplicates for which no royalty was paid.

Battle to select world standard for rewriteable DVD (digital video disc) format is underway. First operational DVD + RW system has been demonstrated at USA trade show. DVD + RW system is backed by Philips and Sony. Rival DVD RAM system backed by Panasonic will not appear in marketplace until sometime in 1999. Amongst arguments - DVD RAM cannot be read on existing DVD ROM drives and will require special peripherals for home PCs that will use system. Panasonic refutes claim and says when product is market ready, it will handle (read and play) DVD and DVD ROM drives as well as being compatible with CD-R and CD-RW discs. Immediate to near term battle will be in PC world as none of the DVD consumer product manufacturers have shown an inclination to turn existing play only DVD consumer units into record and playback units. Panasonic, however, believes DVD-RAM product will ultimately replace VHS tape machines for standard every day home recording. PC builders believe (US)$800 range computers equipped with DVD ability are within reach, perhaps by end of first quarter 1999.

JVC, to date only firm with advanced plans to market HDTV capable digital VHS tape deck, has refined operating specs on models to be released in September, ahead of first terrestrial digital TV commercial telecasting in America. Recorders will have HS (high speed) and LS (low speed) modes with shocking 49 hour recording time possible in LS mode. HS mode will process data at 28.8 Mbps input rate, allowing 3.5 hours of recording on new DF-420 tape cassette. In intermediate STD (standard) mode, tape will last 7 hours at 14.1 Mbps. In LS mode, 2 Mbps will last 49 hours with progressively shorter tape capacities through 7 Mbps (14 hours) in 4 steps. DF-420 cassettes have total capacity of 44 Gbyte. New recorders will do digital or analogue, first models are NTSC only with built-in tuners for off-air or cable, and will be priced under (US)$600.

Price war between established DVD players and new entrant DIVX has broken out. Entry level DVD players are now appearing at (US)$399 with forecast there will be price cuts to US$299 by Christmas. DIVX players, available for now only from Zenith/LGE, remain in US$499 region although with additional brand products due into the market before September, US$399 pricing is forecast. Very few DVD players sell at the entry level price point; the average DVD player sale is over US$600.

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Variations in Irdeto CAMs

An engineering associate of Austar provides some insight into the way CAMs are going to be used within the Austar (and possibly Foxtel) pay-TV packages.

"There are several versions of the Irdeto Conditional Access Module (CAM) purchased first by Galaxy and more recently by Austar. There are differences in the CAM hardware and software. Some CAM versions are non DVB, that is they are proprietary Irdeto designed and called Irdeto Fast 1. The majority of Austar CAMs now being employed are non DVB (version 1.08 or higher). Some identify as Fast 1, some as Euro 1.

"CAM and smartcard combination. An Irdeto CAM is quite useless unless you have an appropriate smartcard and as well, the smartcard is quite useless without the CAM.

"Yes, it is possible to source and import Irdeto IRDs from many countries (such as South Africa, Thailand, Germany). These may in fact work, at this time, on the Austar CAS (conditional access system) but this will not always be the case. Austar supplies IRD to each and every subscriber. The IRD remains the property of Austar and there are several reasons why this is done this way.

"From the technical side, there is a considerable amount of software imbedded inside of the IRD which pertains specifically to the Austar Network. At any time Austar elects to upgrade or activate a new feature, only the Austar supplied IRDs will accept these upgrades and changes. Upgrades or changes can also be sent through the IRD / CAM to fix 'bugs' in the system software, improve or add new services, or upgrade the system security.

"Two immediate planned Austar upgrades are in the advanced stage. One is an 8-day EPG or electronic programme guide that will take the viewer ahead one week and one day. The second is implementation of the Open TV.

"I believe any person who deliberately sets out to prevent upgrade or enhancement of their IRDs for whatever reason will find themselves unable to access new services. Further, IRDs and CAMs sourced outside of Austar may cease to function (at all) in the future after new software has been transmitted.

"Austar has also selected a third generation IRD and has ceased purchasing the DGT-400 from Pace. (**1**) The new product is neither a Pace, UEC or Panasonic product and has a much higher spec than any other IRD currently in use in an Irdeto market world-wide. (**2**)"

...

1/ In fact, the DGT-400 is out of production at Pace. However, Austar has been purchasing DGT-400s from other sources including ex-Galaxy IRDs.

2/ The identity of the new IRD is Sun Moon Star (SMS) and the unit completed Irdeto testing at Hoopdorf, Holland in mid-July. That the SMS unit brings any new generation hardware or software technology to Austar is debatable. The current Irdeto software is 3.500 and this same software is found in both the Panasonic TU-DS10 and the UEC 642 receivers. CTD understands the initial Austar purchase from SMS was for 30,000 units with an option on an additional 50,000 within 12 months.

DIVX launch (June 8 in test markets of Richmond and San Francisco) provided few surprises. Launch of controversial format was delayed from several postponed dates in May because of shortage of DIVX encrypted titles. Approximately 20 titles were available on launch day, number grew by 10 per week through June with 75 available late in July. Initial DIVX players are supplied by Zenith/LGE Electronics; additional models are expected in August from Proscan (PS-8680Z) and RCA (model RC5230Z) with pricing identical to first generation Zeniths at (US)$499. DIVX is scheduled to transition from test marketing to nation-wide (North America) selling by September, hopes to have 150 titles available at that time.

Warner Home Video (WHV) will release 25 titles in Europe late in September with plans to add 8 to 10 additional titles per month thereafter. Two titles, "Conspiracy Theory" and "The Postman," will be released simultaneously on VHS and DVD. In North America, WHV has introduced (US)$14.95 priced "midrange box office releases." Same pricing will apply to "older releases" as well. WHV admits the move is intended to jump start what some now believe is a lagging industry. Some June 30th industry stats: 40 player models from 20 manufacturers, priced from (US)$399 to (US)$5,000. 1,500 titles now available on DVD, forecast of 2,000 by year end. Software (movies) to hardware ratio - 28:1 and growing.

Laser disc death. World's largest LD supplier, Image Entertainment, reports corporate losses rose from (US) $415,000 in comparable 1997 quarter to (US)$10,290,000. Gross sales fell 30%. Company has moved into competitive DVD format, is 8th largest distributor of DVD movies but profit margins on DVDs at this time do

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not compare with older laser disc format. There are estimated 2 million laser disc players in consumer hands in USA. Image also revealed results of DVD industry study that claims of 550,000 DVD players produced through end of May, "*less than 60% have been sold through to consumers*." Firm also believes the market to date has been almost totally built upon early adopters, that market penetration is under 0.3% of total US households, and that contrary to claims by market participants, "*DVD at this time is a niche market and lacks the appeal to become a general market such as VHS*." They believe the lack of in-home recording capability is a serious drawback to the format as well as the market remaining too small for a national adoption of a rental disc technique.

DVD discs at point of manufacture? With most discs now retailing in (US)$24.95 region, interesting industry study reveals disc creators are averaging (US)$10 per disc when they are shipped to the first distribution level.

Biggest operational challenge facing Internet? Unsolicited, junk email. Analysis shows up to 30% of all email traffic is now made up of materials sent to ever growing base of email users. Indirect effects: Network operators providing backbone fibre, copper wire, microwave and satellite links for Internet are having to increase their capacity and upgrade existing circuits (at significant capital costs) to handle the rapidly growing universe of email traffic.

Japanese research programme studying how 2.4 GHz frequencies can be employed to provide wireless loop within home or office building. Concept is that everything now distributed through premise on wire could be converted to RF in this medium microwave range to fashion true wireless interconnection network for PCs, home entertainment, security and communication devices.

Windows 98 problems. When Windows 98 attempts to convert PC's existing Windows 95 programme registry, system crash may follow. Windows 98 also reportedly fails to recognise a number of Windows 95 software drivers for peripheral devices including some modem formats. If Windows 98 will not recognise the previously installed Windows 95 software drivers (for peripheral devices), the PC will crash. Additionally, Windows 98 interrogates any peripheral devices (such as a modem) and asks it for brand name and model number. This modem supplied information is then compared against Windows 98 memory and if the brand or model is not found, the software refuses to connect to the device. A Racal (brand) DAP-6300 ISDN modem has been found to not function because Windows 98 does not include it in internal product memory. Other failures are reported when attempting to use Windows 98 with Adaptec Direct CD software driver and Philips 3610 CD-recorder. Philips confirms their product will not function with Windows 98. And although Windows 98 claims "DVD functions" it turns out this is not true. Even acronym DVD cannot be located in set-up menu nor Add Programmes option. Loading Windows 98 may also freeze the PC making access to existing files and applications impossible. Problems apparently relate to "registry" PC maintains of install and deinstalls of software programmes or hardware over lifetime of PC. If Windows 98 locates discrepancies in registry (a common problem), registry conversion from 95 to 98 fails and the Windows 98 installation halts. At this point user has so-called "blue screen of death" as PC hangs up in limbo because no operating system is functional. Solutions include corrections through DOS commands which are typically beyond average user. Windows 98 and backup files require as much as 200 Mbytes of storage (up to 20% more than Windows 95), and some computers may not have that much space available. Computer makers Dell and Toshiba have issued strongly worded warnings urging users to not attempt to use Windows 98 until firms can issue updated drivers. European users continue to be baffled why Microsoft in pre-Windows 98 releases insisted that "*anything that worked with Windows 95 will work with Windows 98*" when in fact many peripherals do not. Market weight of Microsoft is evident if you attempt to purchase a PC that does not have Windows 98 preinstalled. They simply do not exist. Windows 98 was scheduled to debut in Japan July 25 with two retail versions available; (US)$100 and $175. Microsoft forecasts 500,000 98 packages will be sold in Japan in first 3 months of availability.

Talking dirty. Panasonic Interactive Media has recalled Secret Writer's Society software that was designed to allow children to type composition on computer and through text to speech translation have the text read back to them. Software writers took pains to "cleanse" the programme to prevent children (or others) from typing in long list of obscenities which text to speech translator would repeat back to them. There have been no reported problems with IBM format Windows PCs but MacIntosh computers somehow ignore the forbidden word list. Result is a number of operating errors that allow children or others to type and hear virtually any word they can spell (and with assistance of spell check, correct if they have it wrong). Matsushita Electric Corp of America has recalled programmes and is remastering software for MacIntosh computers.

Internet game players. Interactive Digital Software Association says 1/3rd of all "regular" Internet users now play games. Of 3,000 people surveyed, 54% were women claiming to play games "regularly" and 46% men. Women are drawn to board, card, contest, quiz and trivia games while men most use action, military and strategy games. Sixty percent of game players are aged 25-44 and here is a surprise: More people over 55 play games than teenagers. Half of the players claim to have a college degree, 65% are self classified as "white collar":

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workers. Is there money here? Not necessarily; 89% said they play games only because there is no charge, 11% said they would continue to play if there was a per game fee.

Status of digital still cameras. With high quality 35mm film cameras retailing in $200 region and 35mm film capable of capturing up to 2 million pixels of information per frame, present digital still cameras are poor second. Pricing is in range of $300 and up for cameras that typically have resolution of 300,000 pixels per image. Newer technology cameras with resolutions of more than a million pixels per image are coming into the marketplace but at sharply higher pricing and with significantly less memory capacity than standard 24 image per film canister 35mm. The magic threshold, digital camera makers believe, will be 24 stored images each with a million pixels of resolution each, capable of being printed through home PC system printer with million pixel resolution. All for under $500 per camera. Camera makers forecast two to three years into the future, these criteria will be met. In current calendar year, market forecasters project 4 million cameras growing to 9 million in 2000. Japan remains largest market for digital still devices - 50% of 1998 global consumption.

Titanic on VHS tape will be released in 194 minute VHS version September 1 with (US)$19.95 advertised retail price. Double cassette will use pan and scan as well as widescreen formats. Titanic has been largest grossing movie released to date (US$585 million) and producers are forecasting sale of 20 million VHS copies in USA alone. Marketing behind the film will be intense - long distance telephone company Sprint will offer free movie to any home agreeing to switch to their service. DVD release plans have not been announced.

Ni-cad (NiCds) battery break through. Japanese firm Kumazaki Aim Corp. claims new recharger that will totally reactivate 4 AAA size cells in 8 minutes time. New device also claims ability to correct for NiCds cell deterioration caused by frequent recharging and mischarging. Device retails for equivalent of (US)$85 and handles AAA through D cells.

Cable/Fibre/MMDS/Pay TV

July 1998 issue of (NZ) Consumer Magazine takes to task New Zealand Telecom First Media division for abandoning cable television in Auckland and Wellington and leaving their cables "*in place on poles as visual pollutants*." Magazine describes ugliness of overhead cables from First Media and Saturn (Wellington), suggests that city regulators have an obligation to insist cable TV and other firms adding new cables above ground do so in a way that minimises their visual impact. And if the cable system is abandoned, as First Media has done, Consumer suggests there should be a process that requires the cables be removed from the poles. Photos included captions, "Fibre-optic cabling for electronic media is thicker than a finger and unmissable. It's an eyesore in many parts of Wellington." And, "First Media and Saturn cables create their own spaghetti junction." And, "Even where all other cables are underground, this one has been strung from street lamps."

Possible model for New Zealand and Australia. American pioneer DBS operator DirecTV has created policy that encourages SMATV (satellite master antenna television) system installers / operators to become distributors of their programming. DirecTV provides multiple channels of television programming and headend satellite receivers to SMATV systems; the system operators are responsible for wiring of apartment and other complexes and signing up customers for service. The SMATV operator retains 20% of the revenue the DirecTV programming attracts, balance goes to DirecTV. Similar proposal floated to management of Sky NZ was turned down without explanation although there are similar agreements reportedly in effect covering SMATV systems in Australia served by the original Galaxy programming package.

Sale of two New Zealand MMDS national frequencies owned by Hawaiian cable firm is being handled by Stephen Tietjens at Ernst & Young (64-9-377-4790 and fax 64-9-358-1015).

Sign of the times. Internet posting: "I am searching for a Pace decoder. I can get the dish." Responses included, "How much are you willing to pay?" To which, "I'll pay $100 give or take a few dollars. In fact, I will take two. " To which, "I think you may be hopeful with that offer, but then again, that is about what Foxtel paid!"

British cable TV continues steady although slow growth reaching penetration of 22.4% at end of March. Homes passed is now 11 million, up from 9 million one year ago. Cable telephony, which UK cable systems have pioneered, now reaches 3.5 million homes, up from 2.5 million year prior.

US cable TV success. During week of June 22, "Basic Cable Networks" in cable TV homes actually drew a larger audience than the four commercial networks; cable had a combined rating of 23.2 for a 45% share while the four broadcast networks (ABC, CBS, Fox and NBC) measured 23.0 / 44.9% share. This is the first time cable TV programming has out drawn commercial TV networks.

Sale of MDS Licenses & Equipment by financial receivers Ferrier Hodgson has been advertised in Australian media (July 14). Offer is for "121 multipoint distribution station transmitter and repeaters, licenses, covering Sydney, Melbourne, Brisbane, Perth and Canberra." Contact is Greg Conlon at tel 61-2-9286-9970.

US cable TV which now averages (US)$37.50 per cable subscriber per month in revenue is forecast to see receipts climb to (US)$57.90 by 2003. Other predictions: Digital set tops now near 700,000 will grow to 17

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million while cable modems allowing connection to higher speed Internet will go from present 100,00 to more than 8 million.

AT&T shares on US market plunged 10% following announcement "mother Bell" and cable's largest operator TCI were merging. Deal involves (US)$48 billion stock-cash-debt package. TCI's John Malone will receive more than (US)$1.8 billion value for his TCI 17% ownership. TCI becomes a unit of AT&T, will allow AT&T to become provider of local telephone service fort approximately 30% of USA market. Local service will be designed around Internet Protocol (IP) model with a per customer cost in region of (US)$450. Traditional circuit-switch networks employed by telephone firms have a per customer installation cost of around (US) $750; thus the plan will save AT&T billions of dollars. TCI is currently installing 5,000 IP capable set-top boxes (from General Instrument) per business day. AT&T plans expenditure of (US) $4.4 billion to "polish" the TCI network upgrade to Internet Protocol while TCI claims it will spend (US)$500 million on the same project before the merger is finalised. Funds will be used to expand metropolitan area TCI systems to 750 MHz bandwidth, lesser markets to 550 MHz capacity. More than 1,000 separate approvals must be obtained before merger can be completed; a bureaucratic process that could stretch out two years or more.

Rupert Murdoch plans to take 20% of newly formed corporate conglomerate Fox Group public with analysts suggesting effort will raise (US)$3 billion. Fox Group will consist of Fox TV network and owned TV stations, movie studio 20th Century Fox, Los Angeles Dodgers baseball team, sports rights and cable networks. Announcement caused parent News Corp stock to rise 7% to (US)$31.69 after offering was made public. Where News Corp Australian and New Zealand holdings will fit into this new conglomerate has not been revealed.

Cable TV set-top boxes have been closely controlled by cable operators and private markets for the STBs has been largely black or grey. Under FCC ruling, cable operators will lose their exclusive right to distribute the devices in July 2000. Move is seen as financial boon for consumer electronics industry which has petitioned US government for right to provide and sell STBs for nearly a decade. Under FCC ruling, cable operators will continue to provide only CAM and smartcards for cable boxes.

Cable packaging costs. Cable operators in USA are complaining that children's channel Nickelodeon now costs than 68% more per home per month unless they also agree to take MTV channel from parent Viacom. Rural and small town cable are caught between outraged local community officials who do not want MTV on their cable systems and Viacom that refuses to sell Nickelodeon alone except at prohibitive rate for channel.

Where the money is. Median wage level for US middle management cable TV employees is (US)$72,808 while females holding same job titles average $59,531; a difference that has not gone unnoticed by woman's trade association. Cable TV employment in USA was 127,927 at end of 1997, up from 120,530 in 1996. By comparison, broadcast radio and TV stations employed 149,975 at end of 1997.

Military Channel is latest gee-whiz addition to North American cable TV environment. Service claims to be producing 50% of programming, operates 24 hours daily.

Terrestrial Broadcasting

Prime TV (NZ) transmitter sites have begun test card transmissions (ch. 59 is scheduled for Auckland, ch 60 for Te Aroha) with target date to begin commercial operation of August 16 or 23. Eight UHF transmitters will initially be turned on, covering primary population centres North and South Island. Prime's Albany (North Shore Auckland) studio complex will be connected to transmitter sites through Intelsat 180 leased SCPC (digital) channel provided under contract by BCL. The I180 service will be on LHC using PowerVu, probably conditional access (not confirmed). Prime's sport, movie, sitcom schedule will compete with existing four national networks but offer local advertising to markets outside of Auckland. The I180 feed will carry Auckland region advertising and network promotions; local stations in network will cut away for insertion of own materials including advertising. Prime "believes" it will be included in the Sky Network "free-to-air" bouquet as well when the Sky digital package begins operation. Also testing in Auckland - new "public" channel operated by Triangle.

Live rugby on Sky (NZ) and Australia Channel Seven originating from the Melbourne Cricket Club (MCC) became major flash point in mid-July. MCC objected to new digital TV practice of "pasting" advertising material onto the on-display-video in areas where there was no advertising actually present. MCC said their agreements included the right to sell stadium and other surrounds space for advertising which would on occasion be picked up by the roving television cameras. Using digital production techniques, the originating telecaster is able to super impose advertising logos or materials over virtually any object on the screen; a Reebok banner for example, as Channel Seven had done across a section of MCC south stand. The club insisted it had the sole right to place display advertising at the venue while the TV production people claimed they were free under their agreements to superimpose advertising material on a paid basis. MCC says the practice is not permitted at all; Sky responds that where there are crowd or other shots that contain no advertising, the broadcaster is free to "super" his own display material. Feelings ran so high that Channel 7 and Sky television crews were at one point ordered out of MCC prior to the All Black - Wallaby test.

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Fallout from Murdoch sale of TV Guide. As reported last month, Rupert Murdoch has sold News Corp interests in the world's largest circulation magazine, (US) TV Guide, for reported (US)$2 billion . Murdoch who paid US$2.9 billion for property in 1988, when queried about sale price had snap answer: "*I paid a billion too much for it.*"

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